AmerGen Energy Company, LLC
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AmerGen SM
An Exelon Company

10 CFR 50.73

February 16, 2005
2130-04-20222

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555 - 0001

Oyster Creek Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Licensee Event Report 2004-003-01: Supplement to Actuation of Reactor Protection System due to Spurious HI-HI Trip Signals on Intermediate Range Monitors Caused by Electromagnetic Interference

Reference: Licensee Event Report 2004-003-00: Actuation of Reactor Protection System due to Spurious HI-HI Trip Signals on Intermediate Range Monitors Caused by Electromagnetic Interference, July 22, 2004

Enclosed is Supplemental Licensee Event Report 2004-003-01. This event did not affect the health and safety of the public or plant personnel.

If any further information or assistance is needed, please contact David Fawcett at 609-971-4284.

Sincerely,

C. N. Swenson
Vice President, Oyster Creek Generating Station

CNS/DIF
Attachment 1: Summary of AmerGen Energy Company, LLC Commitments
Enclosure: Licensee Event Report 2004-003-01

cc: S. J. Collins, Administrator, USNRC Region I
P. S. Tam, USNRC Senior Project Manager, Oyster Creek
R. J. Summers, USNRC Senior Resident Inspector, Oyster Creek
File No. 04106

IE22

ATTACHMENT 1

SUMMARY OF AMERGEN ENERGY CO. LLC COMMITMENTS

The following table identifies commitments made in the document by AmerGen Energy Co. LLC (AmerGen). Any other actions discussed in this submittal represent intended or planned actions by AmerGen. They are described to the NRC for the NRC's information and are not regulatory commitments.

COMMITMENT	COMMITTED DATE OR "OUTAGE"
Maintenance Training Program will be revised to include an introduction to electrically induced noise. Specifically, addressing the sensitivity of the NI System electronics to electrical noise induced problems and how to avoid them in the future.	03/30/2005

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Oyster Creek, Unit 1	05000 219	1 OF 3

4. TITLE

Actuation of Reactor Protection System due to Spurious Hi-Hi Trip Signals on Intermediate Range Monitors Caused by Electromagnetic Interference

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	27	2004	2004	- 003 -	01	02	16	2005		05000
									FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

N

10. POWER LEVEL

002

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
David Fawcett, Licensing Engineer	(609) 971-4284

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete EXPECTED SUBMISSION DATE)* ☑ NO

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On May 27, 2004, at 00:31 hours, with the Reactor Mode switch in the Startup position, a reactor scram from approximately 2% power was caused by a spurious actuation of Nuclear Instrumentation (NI) Intermediate Range Monitor (IRM) (EIIS-IG) channels 13, 14, and 18. The spurious actuation was caused by electromagnetic interference (EMI). The reactor shut down as designed.

The safety significance of this event is considered minimal. The plant responded as designed for this type of event. Technical Specification limits were maintained. There was no radioactive release. All safety systems were fully operable. Off-site power was available. Operator performance was satisfactory.

A Root Cause Analysis has been completed identifying the root cause of the EMI induced spiking of the IRM channels. IRM-13 & 14 were found to have loose cable connections at the drawer and nicks in the outer surface of the cable. This has been traced as the entry point of the noise intrusion and the reason the channels spiked. A coated surface on the circuit preamplifier box, on IRM-18, caused a poor connection to a common ground point and provided another entry point for noise intrusion.

Connections were tightened, damaged cabling was repaired, and one IRM pre-amplifier was replaced.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Oyster Creek, Unit 1	05000219	2004	- 003 -	01	2 OF 3

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

Description of Event

On May 27, 2004, at 00:31 hours, with the Reactor Mode switch in the Startup position, Nuclear Instrumentation (NI) Intermediate Range Monitor (IRM) (EIIS-IG) channels 13, 14 (Reactor Protection System (RPS) (EIIS-JC) Channel 1), and IRM channel 18 (RPS Channel 2) simultaneously spiked, indicating Hi-Hi/INOP, which caused a full reactor scram. The reactor was at approximately 2% power in the process of being shut down for a planned maintenance outage. The Source Range Monitoring (SRM) detectors were being driven into the core in accordance with the shutdown procedure.

The reactor scram shut down the reactor as designed. All control rods fully inserted. Level control was in automatic and there was only a slight variation in level during the transient. Pressure control was stable. Operator actions were in accordance with plant procedures.

Analysis of Event

The safety significance of this event is considered minimal. The plant responded as designed. Technical Specification limits were maintained. There was no radioactive release, nor any effect on the health and safety of the public. Operator performance was satisfactory.

Cause of Event

Actuation of the Reactor Protection System was caused by Hi-Hi/INOP signals from IRM channels in both Reactor Protection Systems. The Hi-Hi/INOP signals on the IRM channels were caused by an EMI (electro-magnetic interference) induced spike. The EMI spiking on the IRM instrumentation was apparently caused by loose connectors, cable damage, and/or high resistance in IRM ground path.

The Root Cause for this specific event has been traced to spiking on IRM-13, 14 & 18. IRM-13 & 14 were found to have loose cable connections at the drawer and nicks in the outer surface of the cable. This has been traced as the entry point of the noise intrusion and the reason the channels spiked. A coated surface on the circuit preamplifier box, of IRM-18, caused a poor connection to a common ground point and provided an entry point for noise intrusion.

Corrective Actions:
Interim:

1. The SRM and IRM signal cable connectors were inspected and tightened as necessary.
2. The damaged cable sections were removed or repaired.
3. One IRM pre-amplifier (IRM-18), with a high resistance to ground connection, was replaced.

Long Term to prevent recurrence:

1. Maintenance Training Program will be revised to include an introduction to electrically induced noise. Specifically, addressing the sensitivity of the NI System electronics to electrical noise induced problems and how to avoid them in the future.
2. Implement a preventative maintenance (PM) task that provides a method of testing the NI System for noise related issues, using vendor provided equipment or similar test instruments, just prior to a controlled shut down or startup. (Completed)

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
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Oyster Creek, Unit 1	05000219	2004	- 003 -	01	3 OF 3

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

Additional Information

A. Failed Components:

None

B. Previous similar events:

LER 92-007-00, Reactor Scram Caused by Electrical Noise from a Failed IRM Bypass Switch During Plant Startup

There have been additional cases of IRM spiking problems, but they did not result in a reactor scram while the reactor was critical. An IRM spiking trend has been identified through the Corrective Action Program and a root cause evaluation has been completed.

C. Identification of components referred to in this Licensee Event Report:

Components	IEEE 805 System ID	IEEE 803A Function
Neutron Monitors	IG	RI